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A Review of Anxiety in Autism Spectrum Disorders

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A REVIEW OF ANXIETY IN AUTISM SPECTRUM DISORDERS

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Abstract

This literature review with application thesis explores the prevalence of anxiety in children with Autism Spectrum Disorders (ASD) and dives into differentiating anxiety symptoms from ASD symptoms and provides tools for teachers to help reduce anxiety in the classroom. There is a high percentage of individuals with ASD that have co-occurring anxiety disorders, significantly impacting their everyday lives. Many characteristics of ASD present similarly to anxiety symptoms therefore, making it more difficult to differentiate between the two disorders. This paper highlights different symptoms, factors contributing to diagnosis, and treatment options for children and adolescents with ASD and anxiety. A review of the literature suggests that there is not one specific type of anxiety or one factor of anxiety that is associated with ASD. It has been found that anxiety and ASD symptoms are similar and anxiety can sometimes be under diagnosed. Finally, the literature review noted that typical anxiety treatment options were not as successful in individuals with ASD, but altered therapy results have been promising. The application emphasis of this thesis focuses on the need for awareness in recognizing anxiety in children and adolescents with ASD as well as, providing tools to implement in the classroom to reduce anxiety in an in-service staff training.

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CHAPTER I: INTRODUCTION

Walking into a room filled with students identified with Autism Spectrum Disorders (ASD) during unstructured time, allows a person to observe many behaviors. A young man is pacing from one end of the room to the next. Another sits at a table with his head down, hood up, and eyes closed. Across the room a student follows a staff member, speaking quickly about the upcoming storms. It seems he hasn't taken a breath in minutes. To the right, there is a student sitting alone on the floor grabbing his head, complaining of headaches that never go away. By the entry way you see a student having a tantrum as he realizes his favorite teacher is out sick and will have a sub today. On the other side of the room a girl is crying because her bus ride was too long. In the back of the room you spot a student biting his nails and talking to himself, and right in the middle of the floor a young man is sprawled out, deep in slumber. To the average person this may seem shocking and bizarre but to special education teachers, this is the everyday norm. Many teachers may attribute these characteristics to a student's ASD diagnosis but there is much more going on. This is not just ASD, this is what anxiety looks like.

Anxiety is a real and common occurrence with the students I work with on a daily basis. However, it is difficult to pinpoint what is anxiety and what is ASD. It is also challenging to identify the anxiety and how to reduce or prevent it, as every student is different. Anxiety can manifest in many different ways; bodily, psychologically, and behaviorally. Anxiety can affect a person's heart rate, digestive system, mental health, focus, problem solving skills, sleep patterns energy level, and much more. It is important for teachers to understand and be aware of this when working with individuals with ASD.

Working in the field of special education, I am aware of the many disabilities and struggles students identified in need of special education experience and overcome on a daily basis. Children and young adults with Autism Spectrum Disorders experience considerably higher levels of anxiety than the neurotypical population. van Steensel, Bgels, & Perrin (2011), estimated around 40% of individuals with ASD meet the diagnostic criteria for an anxiety disorder based on the DSM IV. The rates of co-morbid mental health disorders among the ASD population are extremely high (van Steensel, Bgels, & Perrin, 2011). Significant overlap in symptomology between ASD and anxiety leads to difficulty differentiating and accurately diagnosing anxiety disorders in children and adolescents with ASD. Children with ASD have similar fears and worries as typically developing children but the way they manifest anxiety looks much like common ASD characteristics (Castorina, 2017). These characteristics include, resistance to change, obsessive and ritualistic behavior and engaging in self stimulatory behaviors (Castorina, 2017).

Children and adolescents with ASD have a difficult time navigating their world as social situations can be overwhelming or confusing. Individuals with ASD have a tough time understanding Theory of Mind, which is how another person is feeling or what they are thinking. Because of this, social situations seem unpredictable, leaving a person with ASD feeling stressed and anxious (Castorina, 2017). Understanding how students with ASD handle stress and anxiety is difficult due to deficits in language skills used to communicate emotions (Castorina, 2017). Lack of communication and unmet social, emotional, or sensory needs results in challenging behaviors such as meltdowns, avoidance, insistence on sameness or routine, lack of sleep, rocking, spinning or flapping

hands, self-injury (head banging, scratching, biting), and preoccupation with routines and rituals such as lining up objects (Castorina, 2017). Anxiety symptoms in children and adolescents with ASD significantly interfere with the ability to participate in home, community and school activities (de Bruin, Ferdinand, Meester, de Nijs, & Verheij, 2007). It also negatively impacts success in school and employment. This often leads to substance abuse and other psychiatric problems (Velting, Setzer, & Albano, 2004).

Anxiety symptoms cause significant distress for individuals with ASD, therefore it is critical to distinguish co-morbid anxiety from ASD symptoms. Understanding and distinguishing anxiety disorders from symptoms of ASD will allow the implementation of effective treatments and provision of targeted services to allow students with ASD to continue to learn to the fullest extent possible.

Definition of Terms

Autism Spectrum Disorders

An Autism Spectrum Disorder (ASD) is characterized by varying degrees of impairment in the areas of communication, social interaction, and restricted, repetitive patterns of behavior interest or activities (American Psychiatric Association, 2013). Individuals with ASD may have deficits in social-emotional reciprocity, nonverbal communication behaviors, and developing, maintaining, and understanding relationships. They may also have stereotyped or repetitive movements, speech, or use of objects, insistence on sameness, rigidness to change, highly restricted interests abnormal in their intensity, and hypo or hyper reactivity to sensory input (American Psychiatric Association, 2013).

Anxiety Disorders

According to MacNeil, Lopes, & Minnes (2009), anxiety disorders are the most commonly reported mental health concern in individuals with ASD. According to the *Diagnostic and statistical manual of mental disorders- fifth edition,* anxiety disorders include: Separation Anxiety Disorder (SAD), Selective Mutism, Specific Phobia, Social Anxiety Disorder (Social Phobia), Panic Disorder, Panic Attack Specifier, Agoraphobia, Generalized Anxiety Disorder (GAD), Substance/Medication-Induced Anxiety Disorder, Anxiety Disorder Due to Another Medical Condition, Other specified Anxiety Disorder, and Unspecified Anxiety Disorder. Anxiety disorders include disorders that feature excessive fear and anxiety related behavioral disturbances (American Psychiatric Association, 2013). Anxiety symptoms can be extremely debilitating and are often associated with other mental health illnesses (MacNeil, Lopes, & Minnes, 2009).

Specific Phobia

Specific Phobia is an excessive or unreasonable fear caused by a specific object or situation. Many individuals with specific phobia take steps to avoid the situation or object they fear or endure the experiences with increased anxiety or distress (American Psychiatric Association, 2013).

Generalized Anxiety Disorder

Generalized Anxiety Disorder (GAD) is characterized by excessive worry that occurs more days than not for a minimum of six months. Individuals with Generalized Anxiety Disorder find it difficult to control the worry. Anxiety can lead to clinically

significant distress or impairment in occupational, social, or other important areas of functioning (American Psychiatric Association, 2013).

Social Anxiety

Social Anxiety is characterized by significant anxiety triggered by exposure to certain types of social or performance situations. This often leads to avoidance of social situations (American Psychiatric Association, 2013).

Obsessive-Compulsive Disorder

Obsessive-Compulsive Disorder (OCD) is characterized by obsessions that cause distress identified by compulsions. These compulsions are performed to neutralize the individual's anxiety (American Psychiatric Association, 2013).

Separation Anxiety Disorder

Separation anxiety disorder (SAD) is a disorder where a child becomes extremely anxious when separated from parents (American Psychiatric Association, 2013).

Panic Disorder

Panic disorder is a psychiatric disorder where incapacitating fear and anxiety arise repeatedly without reasonable cause (American Psychiatric Association, 2013).

Post-Traumatic Stress Disorder

Post-Traumatic Stress Disorder (PTSD) is a result of experiencing an extremely traumatic event. It is characterized by re-experiencing the event accompanied by increased distress and avoidance of stimuli related to the trauma (American Psychiatric Association, 2013).

CHAPTER II: LITERATURE REVIEW

Research Question and Process

In order to investigate the essential questions, this author began by examining research related to Anxiety and Autism. A systematic search of computerized databases was used, highlighting the words “anxiety”, “autism spectrum disorders” in various combinations with the words “comorbidity”, “manifest”, “anxiety disorders”, “anxious”, “symptoms”, and “treatment” for this literature search. The abstracts were reviewed for relevance. An abstract was considered relevant if it described the sample of using subjects with identified ASD or if an anxiety measure was included. Initially there were 50 articles, of which 30 met the criteria that included a peer-reviewed journal related to Anxiety and Autism Spectrum Disorders.

Prevalence and Factors Influencing Anxiety

Among people with ASD who suffer from mental health difficulties, anxiety is one of the most frequently reported (Magiati et al., 2016). Children and adolescents with ASD are at a higher risk of anxiety and anxiety disorders. According to van Steensel, Bgels, & Perrin (2011), an estimated 40% of individuals with ASD fulfill the diagnostic criteria for an anxiety disorder. Up to 84% of those individuals have impairing, subclinical anxiety symptoms (White, Oswald, Ollendick, & Scahill, 2009). Many resources are available for the diagnosis and treatment of anxiety in people with ASD. However, it is difficult to accurately identify anxiety symptoms and disorders within the population of people with ASD. Anxiety in ASD has been widely debated, but what

remains is unclear whether the symptoms of anxiety constitute a separate diagnosis or if the symptoms align closely with the core characteristics of ASD (Hallett et al., 2013).

Several scholars have suggested that rates of anxiety in young people with ASD can vary as a function of IQ, age, assessment method, ASD subtype, and informant (White, Oswald, Ollendick, & Scahill, 2009; MacNeil, Lopes, & Minnes, 2009). van Steensel, Bgels, & Perrin's study conducted in 2011, estimated the prevalence of anxiety disorders in children and adolescents with ASD using the same parameters in a meta-analysis which included 31 studies. The studies showed substantial comorbidity for anxiety in children and adolescents with ASD. It was estimated that nearly 40% of children with ASD also have a clinically elevated level of anxiety or a minimum of one anxiety disorder. When broken down into specific anxiety disorders, Specific Phobia was the most common disorder diagnoses at 30%. Following Specific Phobia were Social Anxiety, Obsessive Compulsive Disorder (OCD), and Agoraphobia at 17%. Generalized Anxiety Disorder at 15%, Separation Anxiety Disorder at 9%, and Panic Disorder at 2% were less common. The prevalence of anxiety disorders in typically developing children is 2.2-27%. The results of van Steensel et al. (2011) align with Costello, Egger, & Angold's (2005) showing that, children with ASD are twice as likely to reach diagnostic threshold for each anxiety disorder when compared with typically developing children.

The majority of the research supported a significant comorbidity between ASD and anxiety disorders. It is important to note the diagnostic overlap and that the formal diagnostic measures used were not developed for use in ASD populations. van Steensel, Bgels, & Perrin (2011) noted that studies that used ASD specific measurements also reported similar prevalence rates of anxiety disorders ranging from 31.5%-50%. This

corroborates van Steensel, Bgels, & Perrin's (2011) findings of a 40% prevalence rate of anxiety disorders in children and adolescents with ASD.

A study conducted in 2016 by Magiati et al., investigated the association of age, gender, autism symptom severity, and adaptive functioning with different caregiver reported symptoms of anxiety in 241 children with ASD. It was predicted that age and level of adaptive functioning would positively relate with anxiety symptoms. Caregivers were administered the Spence Children's Anxiety Scale-Parent (SCAS-P), Developmental Behaviour Checklist, Parent Version (DBC-P), Second Edition, and Scales of Independent Behavior-Revised (SIB-R). According to Costello, Egger, & Angold (2005) caregivers have been shown to be accurate and reliable reporters of anxieties of their young children.

An analysis of Magiati et al. (2016) results found no links between rates of anxiety symptoms and gender. Age had a significant positive association with the Spence Children's Anxiety Scale OCD symptoms. Adaptive functioning correlated negatively with the DBC-P anxiety scores and panic/agoraphobia scores and positively with Spence Children's Anxiety Scale social phobia. Autism symptom severity positively correlated with Developmental Behavior Checklist social/communication autism scores, the Spence Children's Anxiety Scale total, DBC anxiety, SCAS-P Panic, and OCD subscales. Lastly, the DBC repetitive speech/behavior score positively correlated with all anxiety total scores. Adaptive functioning positively connected to social and generalized anxiety symptoms (Magiati et al., 2016).

The Magiati et al. (2016) study supports Kerns and Kendall's (2012) hypothesis that characteristics such as age and gender of children may impact different anxiety

subtypes, rather than overall anxiety symptoms. The variable that most strongly predicted all anxiety total scores was the DBC repetitive speech/stereotyped behavior. These findings are consistent with other reports of positive correlation between stereotyped behaviors and anxiety in ASD (Magiati et al., 2016).

The results of the Magiati study noted a positive relationship between anxiety and autism severity. Anxiety scores in the study were elevated when compared to the Australian/Dutch norms in the areas of OCD, separation anxiety, physical injury, panic/agoraphobia, and total anxiety symptoms. Magiati et al. (2016) found that 25% of the participants presented clinically elevated anxiety symptoms. The results align with most other studies of young people identified with anxiety and ASD (van Steensel, Bgels, & Perrin, 2011; White, Oswald, Ollendick, & Scahill, 2009).

In 2009, White, Oswald, Ollendick, and Scahill conducted a comprehensive review of forty articles. They summarized previous research on the phenomenology, prevalence, and treatment of anxiety among youth with ASD, and determined that when children have co-occurring anxiety disorders, the overall social impairment associated with ASD increased. This appeared as social avoidance or awkward social interactions which led to further isolation from same-age peers. White et al. believed that learning how anxiety develops and how it interacts with the core disabilities of ASD is important in helping to diagnose and treat anxiety symptoms in youth with ASD.

The forty studies included in White, Oswald, Ollendick, and Scahill's (2009) review included studies with a target population of school-age children/adolescents between 6 and 18 years old. All participants had an ASD diagnosis and clinically assessed, observed or reported anxiety symptoms by a parent, teacher, or the child. The

review found that between 11% and 84% of youth with ASD experienced some type of impairing anxiety. The most frequent anxiety disorders reported among children with ASD included, generalized anxiety disorder, simple phobias, separation anxiety disorder, social phobia, and obsessive-compulsive disorders. They also learned that children with ASD and anxiety displayed more acting out behaviors when compared to neurotypical children.

White, Oswald, Ollendick, and Scahill (2009) examined the phenomenology of anxiety, clearly identified as a prevalent occurrence in children with ASD. They noted that younger children with ASD who are cognitively higher functioning, experienced more anxiety than children with cognitively lower functioning. Many different factors influenced the range of anxiety ratings in a collective comparison of studies review by White, Oswald, Ollendick, and Scahill's (2009). Symptoms of anxiety, tics, and depression were rated higher by teachers than parents. This potentially attributed to context, as a school setting is drastically different from a home environment. Teachers also have a better comparison or benchmark using other neurotypical students than parents.

White, Oswald, Ollendick, and Scahill's (2009) review also found copious treatment options available for typically developing children identified with anxiety but few options for children with ASD. The authors suggested adapting typical interventions to better assess the anxiety in ASD leading to more effective treatment. They explained that interventions for the ASD population were grouped into psychopharmacological, alternative, and psychosocial areas. Many of the psychopharmacological studies used in the 2009 study revealed success when medication was used to reduce symptoms of ASD

related anxiety. It is important to note that the studies had small sample sizes and no control group. More details and information about adapted interventions for treatment of anxiety symptoms in children with ASD is found under the treatment section of this paper.

A meta-analysis completed by van Steensel, Bgels, & Perrin's (2011), discovered that the method of assessment was a significant factor in influencing reported anxiety prevalence rates in children with ASD. The researchers noted that when interview based measures were used the prevalence of anxiety disorders increased. The authors found that questionnaires were associated with higher prevalence rates when looking at anxiety disorder, generalized anxiety disorder, and social anxiety disorder. It is important to differentiate anxiety symptoms significant for an anxiety disorder from anxiety symptoms from ASD symptoms. Children with ASD are likely to experience many symptoms of generalized anxiety disorder and social anxiety disorder however, observable symptoms of anxiety may not meet the clinical criteria for a diagnosis of an anxiety disorder under the DSMV. Not receiving a diagnosis for an anxiety disorder may be attributed to the lack of anxiety symptoms interfering with daily activities or because the symptoms are better accounted for by ASD.

Several scholars have suggested that older children with ASD are more likely to report anxiety (van Steensel, Bgels, & Perrin, 2011; Kuusikko et al., 2008). Other studies reported no age differences in reporting anxiety. It is important to note that different anxiety disorders yield different results when age is considered. Studies with a higher mean age reported lower rates of separation anxiety disorder and higher rates of

generalized anxiety disorder. Costello, Egger, & Angold (2005) found that younger children with ASD reported higher rates of OCD than older children with ASD.

There are mixed findings when looking at IQ scores in association with anxiety scores in youth with ASD. van Steensel, Bgels, & Perrin's 2011 meta-analysis found that an increased rate of anxiety disorders correlated with lower IQ scores. Sukhodolsky et al. (2008) also found this positive correlation, while White and Roberson-Nay (2009) did not. It is possible that ASD children with lower IQ scores have a more difficult time adapting to social situations. The present findings, which considered the relationship between IQ score and anxiety in children with ASD, needs to be interpreted with caution due to mixed findings (van Steensel et al., 2011). A follow-up study conducted by Hallett et al. in 2013, explored the manifestation of anxiety symptoms in children with ASD. This study was a timely extension of the 2008, Sukhodolsky et al. study. Hallett et al. (2013) used the CASI-Anxiety scale in a larger sample of children. There were 415 children identified with ASD included.

Hallett et al. (2013) found similar results to Sukohdolsky et al. (2008), showing that anxiety levels in intellectually disabled children (IQ <70) were significantly lower than those children with higher IQ scores (IQ> 70). Hallett et al. (2013) also found that anxiety symptoms in children with an IQ of 70 or higher showed an increased level of inappropriate speech, hyperactivity, and irritability. Both the high and low IQ groups experienced similar levels of anxiety symptoms including, acting restless, having a difficult time falling asleep, tense or unable to relax, and aspects of social anxiety and separation anxiety.

The ASD clinical subtypes have been redefined with the publication of the DSM V in 2013, but previous studies examined anxiety disorders relative to one or more ASD subtypes as defined by the DSM IV. When comparing anxiety levels across ASD subtypes, MacNeil, Lopes, & Minnes (2009) found that anxiety varied with ASD severity. They noted that children with less severe ASD symptoms demonstrated higher levels of anxiety. Weisbrot, Gadow, DeVincent, & Pomeroy (2005) supported this claim and found that adolescents and children with Asperger's syndrome had the highest anxiety levels followed by individuals with autistic disorder and PDD-NOS. Although there were studies supporting those claims, there were also studies that found no differences in anxiety levels between ASD subtypes (Sukhodolsky et al., 2008). Therefore, the results are inconclusive showing whether anxiety disorders differ across ASD subtypes.

A study conducted by Muris, Steerneman, Merckelbach, Holdrinet, & Meesters (1998) examined anxiety symptoms in 44 children diagnosed with Pervasive Development Disorder (PDD) under the DSM-III category of ASD. Parents were interviewed using the DISC which focused on emotional disorders occurrences in the past 6 months. The results indicated that 37 of the 44 (84.1%) participants fulfilled the criteria for an anxiety disorder. Specific phobia was the most common anxiety disorder (63%). The phobias included, doctors, dentists, thunderstorms, darkness, water, insects, blood, heights, dogs, rabbits, and balloons. A panic disorder was the least frequently reported anxiety disorder (9.1%) with OCD falling closely behind (11.4%). Children exhibited rituals that were more closely aligned with PDDNOS and therefore did not meet the diagnostic criteria for OCD. Muris et al. (1998) found that co-morbid anxiety was

extremely common in children with PDDNOS. They also found that 72.7% of the participants exhibited ritualistic behaviors. The Muris et al. (1998) results differed from other studies conducted in this area. It is important to note that this study had a small sample size and a wide range of participant IQ levels. It is advised by Muris et al. to interpret their results with caution.

Symptoms of Anxiety

An autism spectrum disorder is comprised of deficits in social communication and interaction and with restricted and repetitive behaviors and interests. ASD fall on a spectrum and any one ASD characteristic can differ significantly in level of impairment depending on the individual. Stress and anxiety are manifested similarly within the ASD population. Symptoms are variable according to Kerns et al. 2014, some individuals experienced worries and fears related to change while others were more flexible. Some showed little or no interest in social interaction, while others were very interested in social interactions.

Common fears that have been associated with ASD youth included, fear of loud sounds or unusual phobia such as toilets, beards, and mechanical objects (Kerns et al., 2014). Many of these fears have been related to atypical sensory experiences (Mayes et al. 2013). Others issues included, social avoidance and social distress. The excessive worry seen in individuals with ASD around changes in routine or environment are features of ASD related to flexibility and rigidity. Other highly rigid behaviors such as compulsions, or rule governed preferences were commonly observed and could be accompanied by distress (Kerns et al., 2014). These symptoms made it difficult to differentiate ASD from other anxiety disorders. More recently it has been found that

obsessions, fears of social evaluation and self-consciousness were not emphasized when considering a diagnosis of ASD. The symptoms, however, were closely aligned with social phobia and other anxiety disorders (Kendall & Treadwell, 2007).

A study conducted by Kerns et al. in 2014, assessed anxiety that was either consistent or inconsistent with the DSM V definitions of anxiety in ASD. They explored the relationships between typical anxiety, nontraditional anxiety, anxiety predictors, child characteristics, and ASD symptomology. Kerns et al. (2014) predicted that individuals with ASD experienced anxiety in two ways, typical anxiety aligned with the DSM V and atypical anxiety that does not conform to the DSM V.

Kerns results indicated that youth with ASD exhibited anxiety in typical and atypical ways when compared to DSM definitions. Forty-six percent of the youth displayed anxiety symptoms that were not consistent with DSM V psychological disorders. The atypical symptoms included circumscribed worries (22%), distressed but functionally ambiguous rituals and compulsions (8.5%), social fearfulness (8.5%), and impairing unusual fears (12%). The other fifty-four percent of youth did not demonstrate the same anxiety associated with their ASD. This indicated that distress was different from impairment. The atypical symptoms were a different form of anxiety and still caused distress but were not labeled in the DSM V. These findings supported that the manifestation of co-occurring anxiety in ASD youth was similar to youth without ASD (Kerns et al., 2014). It also supported the presence of impairing worries, unusual fears, and compulsive/ritualistic behaviors that were related to both ASD and anxiety. These symptoms reflected a distinct manifestation of anxiety symptoms that did not align with

traditional DSM criteria. Nonetheless, subjects exhibited an anxiety disorder (Kerns et al., 2014).

Another study conducted by White et al. in 2015, examined symptoms of anxiety in youth with ASD compared to youth without ASD. They determined how to conceptualize anxiety within people who have ASD. Symptoms of anxiety within a person with ASD may be atypical compared to the outward manifestation of anxiety in typically developing people. They measured anxiety in 465 children and adolescents using the Multidimensional Anxiety Scale for Children parent (MASC-P) and child (MASC-C) anxiety scales. Participants fell into one of two groups either ASD or typically developing. All participants met criteria for an anxiety disorder.

The analysis indicated that youth with ASD sometimes experienced anxiety in different ways than typically developing peers. The results supported Kerns and Kendall's (2014) assertion that anxiety disorders can co-occur in people with ASD, that the anxiety can be separate from the ASD, and that the anxiety may not be a phenomenon of ASD.

As stated earlier, youth with ASD experienced and struggled with co-occurring anxiety problems, which additionally impaired daily functioning (Kerns et al., 2015). Individuals with ASD and co-morbid anxiety disorders had greater functional impairment due to the increased difficulties with socialization (Chang, Quan, & Wood, 2012). These co-occurring symptoms caused distress, therefore amplifying the core characteristics of ASD. Behavioral struggles can be triggered leading to, increased tantrums, self-injury, and aggression. Different types of anxiety disorders have different onset predictors,

disease courses, and correlates across childhood and adolescence (Costello, Egger, & Angold, 2005).

Many studies have shown elevated rates of depression and anxiety symptoms among individuals with ASD. Strang et al. (2012) examined rates of depression and anxiety symptoms among children and adolescents with ASD. He studied the relationship that IQ, age, or ASD symptoms played on subjects who participated in the study. Strang et al.'s (2012) study included ninety-five children with a clinical diagnosis of ASD. All participants were between the ages of six and eighteen with IQ levels greater or equal to seventy. Participants were assessed for depression and anxiety with the Child Behavior Checklist. The ASD symptoms were assessed through the Autism Diagnostic Interview (ADI) and Autism Diagnostic Observation Schedule (ADOS).

Strang et al., hypothesized that depression and anxiety rates would be higher in children and adolescents with ASD in comparison to typically developing youth. The study's results supported Strang's hypothesis which found elevated depression and anxiety scores in youth with ASD compared to the general population. Strang et al. (2012) noted that 44% of the participants were in the borderline or clinical range for depression, 56% were in the borderline or clinical range for anxiety, and 37% of participants were in the borderline or clinical range for both anxiety and depression. The results showed that over half of the participants were in the clinical range for both emotional disorders, depression and anxiety.

Strang et al.'s (2012) results did not support their second hypothesis that age affected levels of depression and anxiety symptoms in individuals with ASD. They also did not find any differences in depression or anxiety symptoms when comparing children

and adolescents. Contradictory to other studies and the third hypothesis, Strang et al. (2012) did not find a significant relationship between emotional symptoms and cognitive ability. In Strang et al.'s (2012) study, full scale IQ, verbal ability, or nonverbal ability had no significant effect on depression or anxiety symptoms in children and adolescents with ASD. Lastly, the data did not support Strang et al.'s (2012) hypothesis that autism symptoms and emotional symptoms increased during development. Overall, Strang et al. (2012) concluded that there was an increased risk of depression and anxiety symptoms regardless of IQ, age, or ASD symptoms among children and adolescents with ASD.

Assessments

A 2009 study conducted by, MacNeil, Lopes, & Minnes, took a closer look at anxiety in children and adolescents with ASD. They focused on practical and useful assessments clinicians could use when appropriately diagnosing co-morbid anxiety disorders in children and adolescents with ASD. Over the years they noted that, clinicians have struggled to decipher whether psychiatric symptoms of anxiety in individuals with ASD were linked to core ASD features or whether they characterized true psychiatric symptoms. Anxiety symptoms can cause significant distress and negatively interfere with daily functioning. Specific anxiety treatment has been clinically associated with improvements in quality of life. In addition, the authors noted that understanding and implementing appropriate, accurate assessment tools was critical for accurate diagnosis of anxiety disorders in youth with ASD.

MacNeil, Lopes, & Minnes (2009), found that when assessing children and adolescents with ASD for anxiety disorders, multiple informants, standardized assessments, and multimodal assessment techniques were appropriate and most

effectively used to accurately identify anxiety disorders. Multimodal assessments included clinical interviews, direct observation, rating scales, and physiological measurement, etc. Multiple informants included parents, teachers, self-report, etc. Standardized assessments included instruments that demonstrated sufficient reliability and validity, as well as normative data for ASD samples.

Kerns et al. (2015) conducted a study investigating the accuracy of the Brief Anxiety Scales on ASD youth with anxiety. There were 54 youth with ASD who participated in the study. Parents completed an expanded version of the child/parent Anxiety Disorders Interview Schedule (ADIS). This assessment focused on identifying typical and atypical fears of children with ASD and anxiety. Parents and children also completed the brief scales of anxiety symptoms. These included the Pediatric Anxiety Rating Scale (PARS), Behavioral Assessment Schedule for Children-2 (BASC-2), Negative Affective Self-Statements Questionnaire (NASSQ), and Screened for Childhood Anxiety and Related Disorders (SCARED).

Kerns et al. (2015), results showed that 37% of the 20 children in the sample were diagnosed with at least one anxiety disorder. They found that 24% presented with generalized anxiety disorder, 19% presented with social phobia, and 11% presented with anxiety disorder. The researchers also noted that 14 of the 20 children had impairing atypical anxiety. In regards to accuracy, Kerns et al. (2015) noted that youth and parent reported measures for anxiety may be limited. The assessments used did not detect atypical, but impairing anxiety symptoms in ASD youth. All of the parent/child reported assessments, excluding the NASSQ, failed to identify over 42% of youth with anxiety disorders. The NASSQ over diagnosed anxiety disorders in children who did not have

anxiety disorders. The BASC-2, PARS, and SCARED identified 95% of participants with an anxiety disorder but 22-29% of those were misidentified by the BASE-2 and PARS, while the SCARED misidentified 65% of those. Kerns et al. (2015) results were consistent with other studies finding that the BASC-2, NASSQ, PARS, and SCARED both under-identified real anxiety disorders and falsely identified those without anxiety disorders in youth with ASD. Overall, Kerns et al. (2015) results indicated that the measures used in this study lacked sufficient psychometric properties in the areas of sensitivity and specificity.

Treatments

Finding effective treatments for anxiety-related symptoms among children and adolescents with ASD can be challenging. Many successful intervention programs have been developed for typically developing children with anxiety disorders, however, due to the cognitive, linguistic, and social characteristics of ASD, the standard treatment approaches are less effective for youth with ASD. In 2013, Storch et al., examined the effectiveness of modified cognitive behavior therapy (CBT) protocol relative to treatment as usual (TAU) in children with ASD and clinically significant anxiety.

Storch et al.'s (2013) study included 45 participants, ages 7 to 11 years old with high functioning ASD and clinically significant anxiety symptoms. They participated in 16 weekly sessions of CBT or TAU. Assessments were conducted pre-treatment, post-treatment, and at a three month follow-up.

Storch et al. (2013) results showed significant improvement in reducing anxiety symptoms in youth with ASD using the modified CBT relative to TAU results. They

found that 75% of the participants in the CBT group showed gains versus 14% in the TAU group. Overall, Storch et al. (2013) concluded that adapted CBT for anxious youth with high functioning ASD demonstrated great results in reducing anxiety symptoms.

A previous study conducted by Wood et al. in 2009, also implemented a modified cognitive behavior therapy protocol altered for children with ASD and comorbid anxiety disorders. Wood et al. (2009) focused on the importance of adapting and expanding traditional CBT. This was due to the identification of three core ASD symptoms that caused added anxiety. The core ASD symptoms included poor perspective taking and social skills, limited interests and stereotypes, and poor adaptive skills. Poor social skills and perspective taking skills may have resulted in decreased effectiveness using traditional CBT unless modifications were made. Limited interests and stereotypes interfered with the youth's development of social relationships in school. According to Wood et al. (2009), children's interests needed to be incorporated into treatment models to build rapport but also were limited in order to increase reciprocal social relationships with peers. Lastly, Wood et al. (2009) stressed the importance of improving adaptive skills in order to find success with CBT and reduction of anxiety. Adaptive skill deficits included poor organizational skills and poor self-care. It was detrimental for youth trying to build relationships when they were unable to tie their shoes, change their clothes, or wipe themselves. Building deficit skills and integrating self-care interventions may help youth with ASD benefit more from CBT techniques (Wood et al., 2009).

Forty children ages 7-11 diagnosed with ASD and a comorbid anxiety disorder participated in Wood et al.'s (2009) study. Participants underwent 16 weeks of cognitive behavior therapy. The therapy included coping skills training and in vivo exposure,

therapy used to reduce fear associated with anxiety triggers. Parents were also a part of the CBT and their role focused on supporting the in vivo exposures, using proactive communication skills to encourage their child's independence with daily routines, and providing positive reinforcement. The therapy was adapted to fit for children with ASD by addressing poor social skills, restricted interests and stereotypes, adaptive skills deficits, and poor attention and motivation.

An analysis of Wood et al.'s (2009) study showed that an enhanced CBT program for children with ASD and anxiety decreased anxiety symptoms more effectively than a regular CBT program, supporting his original hypothesis. The research team found that outcomes of the enhanced CBT program were comparable to those of typically developing children who received CBT treatment for anxiety disorders. The results of the study suggested that with appropriate enhancements, cognitive behavior therapy is effective in the treatment of anxiety disorders among children with ASD.

Reaven et al. (2009) dove deeper into examining the effects of cognitive behavior therapy on anxiety symptoms in children with high functioning ASD. Thirty-three children with ASD who participated in Reaven et al.'s (2009) cognitive behavioral group treatment were studied. The goal of the CBT was to reduce the severity of anxiety symptoms in children with ASD targeting social, separation, and generalized anxiety symptoms. Participants underwent 12 week cognitive-behavior group therapy sessions led by trained professionals. Pre and post treatment assessments evaluated anxiety symptoms. An analysis of the responses revealed that parents reported significant reductions in anxiety symptoms in their children following participation in the cognitive-behavior therapy group. Promising results related to the effectiveness of CBT sessions

were found by Reaven et al. (2009) in regards to the high rates of comorbidity between anxiety and ASD.

An earlier study conducted by Chalfant, Rapee, & Carroll in 2007 also examined the effects of cognitive behavior therapy on children with comorbid anxiety disorders and high functioning ASD. Forty-seven children with high functioning ASD and a diagnosed anxiety disorder participated in the study. They participated in twelve weeks of group therapy treatment to reduce symptoms of anxiety. Pre and post treatment measurements were obtained through clinical interviews using the Anxiety Disorders Interview Schedule (ADIS) and accompanying child, parent, and teacher report. The child measures included the Revised Children's Manifest Anxiety Scale (RCMAS), Spence Children's Anxiety Scale (SCAS), and Children's Automatic Thoughts Scale (CATS). The parent measures included the Spence Children's Anxiety Scale—Parent Report and Strengths and Difficulties Questionnaire—Parent Report. The teacher measure included the Strengths and Difficulties Questionnaire—Teacher Report. There were multiple small groups who participated in the therapy and the results were compared with the control group that was made up of children on the wait list (Chalfant, Rapee, & Carroll, 2007).

Chalfant, Rapee, & Carroll's (2007) CBT intervention focused on treating the basic components of anxiety. They covered general recognition of anxious feelings and reactions to anxiety, coping self-talk, simple cognitive restricting exercises, relapse prevention, and exposure to feared stimuli.

Chalfant, Rapee, & Carroll (2007) found that following treatment, 71.4% of the participants no longer fulfilled the diagnostic criteria for an anxiety disorder. There were significant reductions in anxiety levels and symptoms as measured by parent, child, and

teacher report. These findings supported previous results from studies testing the efficacy of CBT in treating anxiety disorders in typically developing children (Chakfant, Rapee, & Carroll, 2007).

Vasa et al. (2014) led a study examining psychopharmacological and non-psychopharmacological treatments for youth with ASD and anxiety. There were nine cognitive behavioral therapy techniques and four psychopharmacological treatments included in Vasa et al.'s systematic review of interventions. Three drugs were used in these studies. Citalopram, an antidepressant typically used to treat depression, is in a group of drugs called selective serotonin reuptake inhibitors (SSRI) (Vasa et al. 2014). SSRIs restore the balance of serotonin improving chemical balance. Fluvoxamine, another SSRI, is an antidepressant used to treat OCD (Vasa et al. 2014). Lastly, Buspirone is an anti-anxiety medicine used to treat symptoms of anxiety such as tension, fear, irritability, dizziness, etc.

Vasa et al. (2014) found that Citalopram reduced anxiety and decreased target symptoms such as aggression, stereotypes, and preoccupations in 59% of participants. They also found that citalopram reduced PDD-related anxiety symptoms in 66% of participants. These symptoms included repetitive behaviors, inflexibility related to change, and preoccupations with nonfunctional routines. Fluvoxamine use lacked efficacy in treating OCD anxiety symptoms. The final drug, Buspirone, reduced anxiety in 73% of participants. Overall, the pharmacological study revealed success when medication was used to reduce symptoms of ASD related anxiety.

CHAPTER III: APPLICATION

Throughout the research of anxiety and ASD, there was a lack of information on interventions for educators in the school setting. There is a plethora of information related to anxiety in neurotypical students but not a significant amount dedicated to students who also have ASD. Many times students with ASD have unwanted or unexpected behaviors and those behaviors get assigned to the ASD when there may be something deeper going on. Anxiety symptoms are frequently overlooked or passed off as a factor of ASD, not benefiting the students experiencing the anxiety. This realization led me to the focus of my application project. It starts with educating classroom teachers.

My application project is an in-service staff training raising awareness of the prevalence of anxiety disorders among the students with ASD (see Appendix A). The focus is to educate about the symptoms and factors that contribute to anxiety. The training highlights symptoms teachers may see in their classrooms and discusses traditional treatment options for families. Finally, it equips educators with the tools to implement in their classrooms to reduce anxiety levels and explains why those tools will benefit the students. Knowledge is power and understanding why a tool is useful is extremely beneficial. Reducing anxiety in the classroom setting is an important step to help these students fully access education and learn to their highest potential.

CHAPTER IV: DISCUSSION AND CONCLUSION

Summary of Literature

This literature review answered the questions: How do educators differentiate anxiety from ASD and what is the prevalence of anxiety as a co-morbid disorder? What factors contribute to a diagnosis? Lastly, what treatment options are available for children and adolescents with anxiety and ASD?

An Autism Spectrum Disorder (ASD) is characterized by varying degrees of impairment in the areas of communication, social interaction, and restricted, repetitive patterns of behavior interest or activities (American Psychiatric Association, 2013). Anxiety disorders include disorders that feature excessive fear and anxiety related behavioral disturbances (American Psychiatric Association, 2013). According to MacNeil, Lopes, & Minnes (2009), anxiety disorders are the most commonly reported mental health concern in individuals with ASD. Costello, Egger, & Abgold (2005) found that children and young adults with ASD are twice as likely to reach the diagnostic threshold for an anxiety disorder and experience considerably higher levels of anxiety as the neurotypical population. van Steensel, Bgels, & Perrin (2011), estimated around 40% of individuals with ASD meet the diagnostic criteria for an anxiety disorder based on the DSM IV.

Anxiety symptoms in children and adolescents with ASD significantly interfere with their ability to participate in home, community and school activities (de Bruin, Ferdinand, Meester, de Nijs, & Verheij, 2007). Anxiety also negatively impacts success in school and employment. This often leads to substance abuse and other psychiatric problems (Velting, Setzer, & Albano, 2004). Anxiety symptoms cause significant distress

for individuals with ASD, therefore it is critical to distinguish co-morbid anxiety from ASD symptoms. Understanding and distinguishing anxiety disorders from symptoms of ASD will allow the implementation of effective treatments and provision of targeted services to allow students with ASD to continue to learn to the fullest extent possible.

Current literature illustrated mixed results in the identification of contributing factors impacting anxiety levels in individuals with ASD. Magiati et al. (2016) and Kerns and Kendall (2012) found that characteristics such as age and gender of children impacts different anxiety subtypes, rather than overall anxiety symptoms. Findings by van Steensel et al (2011), which considered the relationship between IQ score and anxiety in children with ASD, were mixed and need to be interpreted with caution. The results of Strang et al. (2012) supported the hypothesis that depression and anxiety rates are higher in children and adolescents with ASD when compared with typically developing youth.

A meta-analysis completed by van Steensel, Bgels, & Perrin (2011), discovered that the method of assessment was a significant factor which influenced reported anxiety prevalence rates in children with ASD. Kerns et al. (2015) results were consistent with other studies that found that the BASC-2, NASSQ, PARS, and SCARED both under-identified real anxiety disorders and falsely identified those without anxiety disorders in youth with ASD. MacNeil, Lopes, & Minnes (2009), found that when assessing children and adolescents with ASD for anxiety disorders, multiple informants, standardized assessments, and multimodal assessment techniques were appropriate and most effective to accurately identify anxiety disorders.

When looking into treatment for children with ASD and anxiety, traditional options were not readily available. The adaptation of typical interventions to better assess

the anxiety in ASD, led to more effective treatment (White, Oswald, Ollendick, and Scahill, 2009). Multiple studies found modified cognitive behavior therapy altered for children with ASD to be successful in reducing anxiety symptoms. The CBT alterations were focused around the cognitive, linguistic, and social characteristics of ASD that caused added anxiety. Results showed that an enhanced CBT program for children with ASD and anxiety decreased anxiety symptoms more effectively than a regular CBT program. Lastly, one study focused on the use of medication to treat anxiety in children and adolescents with ASD. The results from the study supported the use of medication to effectively treat anxiety.

Limitations of the Research

Both anxiety and ASD have been diagnosed for years and a myriad of research exists on each topic. The research combining both anxiety and ASD is limited. I found that in many studies the participants had high IQ's or Asperger's. ASD is a spectrum therefore limiting the research to one end of the spectrum is a huge limitation. There is much to learn about anxiety symptoms and treatment in individuals with low IQ's. I was very interested in learning about the different treatment options available but was disappointed with the results. There is not notable of research available in regards to treatment for individuals with ASD and anxiety. More research needs to be conducted in the field of treatments for anxiety among people with ASD. Studies researched were limited by small sample sizes and a shortage of control groups. Much of the research I found lacked diversity. Anxiety symptoms most definitely present differently in individuals from different cultural and socioeconomic backgrounds.

I was surprised by the vast amount of research available on types of assessments and the validity of tools. However, the results of the studies suggested that there are not many effective assessments available for this population. I would have liked to see more research focused on creating new tools that are effective for young people with ASD and anxiety. Hopefully, new research and future data will help address these limitations.

Implications for Future Research

Anxiety in ASD is extremely common and there is a prominent lack of agreement regarding the different diagnosis and make-up of anxiety in youth with ASD (van Steensel, F., Bgels, S., & Perrin, S., 2011). It is important for educators to understand the difference between anxiety and ASD, as well as strategies or tools they can implement in their classrooms. Additional research and evidence-based tools are needed to help individuals with ASD and anxiety find success in their lives.

Future research topics:

- Assessments that can distinguish between ASD and anxiety symptoms
- Effects lower IQ play in anxiety symptoms
- Treatment options for anxiety in individuals with ASD
- Consistency with how anxiety symptoms are measured

Needed evidence-based tools:

- In-service training for educators on the differences in anxiety and ASD to build awareness
- Tools and strategies educators can use in the school setting to reduce anxiety in children with ASD

- Effective assessments to accurately diagnose anxiety in children with ASD

Conclusion

After completing my research, it is apparent that anxiety is common and significantly prevalent in children and adolescents with ASD. I see anxiety as a barrier that many students face on a daily basis. It is critical to learn how anxiety develops and how it manifests with the core characteristics of ASD. Teachers need to understand anxiety to accurately address and treat symptoms in youth with ASD. As educators it is critical for us to understand anxiety and use preventative strategies in the classroom to give these students the best learning environment possible. The presentation that I have put together as a training tool for schools will educate about anxiety and ASD, bring awareness to the prevalence, identify symptoms and influencing factors, discuss treatment, and provide effective tools for teachers to implement in their classrooms to reduce anxiety levels in their students. It is my hope that this presentation will benefit schools, educators, and ultimately our students.

References

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). Arlington, VA: American Psychiatric Publishing.

Castorina, L. (2017, May 30). Anxiety: children and teenagers with autism spectrum disorder. Retrieved July 11, 2017, from http://raisingchildren.net.au/articles/autism_spectrum_disorder_anxiety.html

Chalfant, A. M., Rapee, R., & Carroll, L. (2007). Treating anxiety disorders in children with high functioning autism spectrum disorders: A controlled trial. Journal of Autism and Developmental Disorders, 37(10), 1842-1857.

Chang, Y., Quan, J., & Wood, J. J. (2012). Effects of anxiety disorder severity on social functioning in children with autism spectrum disorders. Journal of Developmental and Physical Disabilities, 24(3), 235-245.

Cholemkery, H., Mojica, L., Rohrmann, S., Gensthaler, A., & Freitag, C. (2014). Can autism spectrum disorders and social anxiety disorders be differentiated by the social responsiveness scale in children and adolescents? Journal of Autism & Developmental Disorders, 44(5), 1168-1182. doi:10.1007/s10803-013-1979-4

Costello, E. J., Egger, H. L., & Angold, A. (2005). The developmental epidemiology of anxiety disorders: Phenomenology, prevalence, and comorbidity. Child and Adolescent Psychiatric Clinics of North America, 14(4), 631-648.

Davis, K. (2017). *Classroom ideas to reduce anxiety*. Retrieved July 26, 2017, from https://www.iidc.indiana.edu/pages/classroom-ideas-to-reduce-anxiety

de Bruin, E. I., Ferdinand, R. F., Meester, S., de Nijs, P. F., & Verheij, F. (2007). High rates of psychiatric co-morbidity in PDD-NOS. Journal of Autism and Developmental Disorders, 37(5), 877-886.

Ghaziuddin, M. (2005). A family history study of asperger syndrome. Journal of Autism and Developmental Disorders, 35(2), 177-182.

Gillott, A., & Standen, P. J. (2007). Levels of anxiety and sources of stress in adults with autism. Journal of Intellectual Disabilities, 11(4), 359-370. doi:10.1177/1744629507083585.

Hallett, V., Lecavalier, L., Sukhodolsky, D., Cipriano, N., Aman, M., McCracken, J., . . . Scahill, L. (2013). Exploring the manifestations of anxiety in children with autism spectrum disorders. Journal of Autism & Developmental Disorders, 43(10), 2341-2352. doi:10.1007/s10803-013-1775-1.

Kendall, P. C., & Treadwell, K. R. (2007). The role of self-statements as a mediator in treatment for youth with anxiety disorders. Journal of Consulting and Clinical Psychology, 75(3), 380.

Kerns, C. M., Kendall, P. C., Berry, L., Souders, M. C., Franklin, M. E., Schultz, R. T., . . . Herrington, J. (2014). Traditional and atypical presentations of anxiety in youth with autism spectrum disorder. Journal of Autism and Developmental Disorders, 44(11), 2851-2861.

Kerns, C. M., Maddox, B. B., Kendall, P. C., Rump, K., Berry, L., Schultz, R. T., . . . Miller, J. (2015). Brief measures of anxiety in non-treatment-seeking youth with

autism spectrum disorder. Autism: The International Journal of Research and Practice, 19(8), 969-979.

Kuusikko, S., Pollock-Wurman, R., Jussila, K., Carter, A. S., Mattila, M., Ebeling, H., . . . Moilanen, I. (2008). Social anxiety in high-functioning children and adolescents with autism and asperger syndrome. Journal of Autism and Developmental Disorders, 38(9), 1697-1709.

MacNeil, B. M., Lopes, V. A., & Minnes, P. M. (2009). Anxiety in children and adolescents with autism spectrum disorders. Research in Autism Spectrum Disorders, 3(1), 1-21.

Magiati, I., Ong, C., Lim, X. Y., Tan, J. W., Ong, A. Y. L., Patrycia, F., . . . Howlin, P. (2016). Anxiety symptoms in young people with autism spectrum disorder attending special schools: Associations with gender, adaptive functioning and autism symptomatology. Autism: The International Journal of Research and Practice, 20(3), 306-320.

Mayes, S. D., Calhoun, S. L., Aggarwal, R., Baker, C., Mathapati, S., Molitoris, S., & Mayes, R. D. (2013). Unusual fears in children with autism. Research in Autism Spectrum Disorders, 7(1), 151-158.

Muris, P., Steerneman, P., Merckelbach, H., Holdrinet, I., & Meesters, C. (1998). Comorbid anxiety symptoms in children with pervasive developmental disorders. Journal of Anxiety Disorders, 12(4), 387-393.

Reaven, J. A., Blakeley-Smith, A., Nichols, S., Dasari, M., Flanigan, E., & Hepburn, S. (2009). Cognitive-behavioral group treatment for anxiety symptoms in children

with high-functioning autism spectrum disorders a pilot study. Focus on Autism and Other Developmental Disabilities, 24(1), 27-37.

Simonoff, E., Pickles, A., Charman, T., Chandler, S., Loucas, T., & Baird, G. (2008). Psychiatric disorders in children with autism spectrum disorders: Prevalence, comorbidity, and associated factors in a population-derived sample. Journal of the American Academy of Child & Adolescent Psychiatry, 47(8), 921-929.

Storch, E. A., Arnold, E. B., Lewin, A. B., Nadeau, J. M., Jones, A. M., De Nadai, A. S., . . . Murphy, T. K. (2013). The effect of cognitive-behavioral therapy versus treatment as usual for anxiety in children with autism spectrum disorders: A randomized, controlled trial. Journal of the American Academy of Child & Adolescent Psychiatry, 52(2), 142. e2.

Strang, J. F., Kenworthy, L., Daniolos, P., Case, L., Wills, M. C., Martin, A., & Wallace, G. L. (2012). Depression and anxiety symptoms in children and adolescents with autism spectrum disorders without intellectual disability. Research in Autism Spectrum Disorders, 6(1), 406-412.

Sukhodolsky, D. G., Scahill, L., Gadow, K. D., Arnold, L. E., Aman, M. G., McDougle, C. J., . . . Lecavalier, L. (2008). Parent-rated anxiety symptoms in children with pervasive developmental disorders: Frequency and association with core autism symptoms and cognitive functioning. Journal of Abnormal Child Psychology, 36(1), 117-128.

van Steensel, F., Bgels, S., & Perrin, S. (2011). Anxiety disorders in children and adolescents with autistic spectrum disorders: A meta-analysis. Clinical Child & Family Psychology Review, 14(3), 302-317. doi:10.1007/s10567-011-0097-0.

Vasa, R. A., Carroll, L. M., Nozzolillo, A. A., Mahajan, R., Mazurek, M. O., Bennett, A. E., . . . Bernal, M. P. (2014). A systematic review of treatments for anxiety in youth with autism spectrum disorders. Journal of Autism and Developmental Disorders, 44(12), 3215-3229.

Velting, O. N., Setzer, N. J., & Albano, A. M. (2004). Update on and advances in assessment and cognitive-behavioral treatment of anxiety disorders in children and adolescents. Professional Psychology: Research and Practice, 35(1), 42.

Weisbrot, D. M., Gadow, K. D., DeVincent, C. J., & Pomeroy, J. (2005). The presentation of anxiety in children with pervasive developmental disorders. Journal of Child & Adolescent Psychopharmacology, 15(3), 477-496.

White, S. W., Lerner, M. D., McLeod, B. D., Wood, J. J., Ginsburg, G. S., Kerns, C., . . . Compton, S. (2015). Anxiety in youth with and without autism spectrum disorder: Examination of factorial equivalence. Behavior Therapy, 46(1), 40-53. doi:10.1016/j.beth.2014.05.005.

White, S. W., Oswald, D., Ollendick, T., & Scahill, L. (2009). Anxiety in children and adolescents with autism spectrum disorders. Clinical Psychology Review, 29(3), 216-229.

White, S. W., & Roberson-Nay, R. (2009). Anxiety, social deficits, and loneliness in youth with autism spectrum disorders. Journal of Autism and Developmental Disorders, 39(7), 1006-1013.

Wood, J. J., Drahota, A., Sze, K., Har, K., Chiu, A., & Langer, D. A. (2009). Cognitive behavioral therapy for anxiety in children with autism spectrum disorders: A randomized, controlled trial. Journal of Child Psychology and Psychiatry, 50(3), 224-234.

Appendix A

Anxiety in Autism

BY: HANNAH BETZ

Autism Spectrum Disorders

Autism Spectrum Disorder (ASD) is characterized by varying degrees of impairment in the areas of communication, social interaction, and restricted, repetitive patterns of behavior interest or activities (American Psychiatric Association, 2013).

Individuals with ASD may have deficits in social-emotional reciprocity, nonverbal communication behaviors, and developing, maintaining, and understanding relationships.

They may also have stereotyped or repetitive movements, speech, or use of objects, insistence on sameness, rigidness to change, highly restricted interests abnormal in their intensity, and hypo or hyper reactivity to sensory input (American Psychiatric Association, 2013).

Anxiety Disorders

According to MacNeil, Lopes, & Minnes (2009), anxiety disorders are the most commonly reported mental health concern in individuals with ASD.

According to the *Diagnostic and statistical manual of mental disorders- fifth edition,* anxiety disorders include: Separation Anxiety Disorder (SAD), Selective Mutism, Specific Phobia, Social Anxiety Disorder (Social Phobia), Panic Disorder, Panic Attack Specifier, Agoraphobia, Generalized Anxiety Disorder (GAD), Substance/Medication-Induced Anxiety Disorder, Anxiety Disorder Due to Another Medical Condition, Other specified Anxiety Disorder, and Unspecified Anxiety Disorder.

Anxiety disorders comprise of disorders that feature excessive fear and anxiety related behavioral disturbances (American Psychiatric Association, 2013). Anxiety symptoms can be extremely debilitating and are often associated with other mental health illnesses (MacNeil, Lopes, & Minnes, 2009).

Specific Phobia

Specific Phobia is comprised of excessive or unreasonable fear caused by a specific object or situation. Many individuals with specific phobia take steps to avoid the situation or object they fear or endure the experiences with increased anxiety or distress (American Psychiatric Association, 2013).

Think 

Do you know a student like this?

Obsessive-Compulsive Disorder (OCD)

Obsessive-Compulsive Disorder is characterized by obsessions that cause distress identified by compulsions. These compulsions are performed to neutralize the individual's anxiety (American Psychiatric Association, 2013).

Think 

Do you know a student like this?

Social Anxiety

Social Anxiety is characterized by significant anxiety triggered by exposure to certain types of social or performance situations. This often leads to avoidance of social situations (American Psychiatric Association, 2013).

Think 

Do you know a student like this?

Generalized Anxiety Disorder (GAD)

Generalized Anxiety Disorder is characterized of excessive worry that occurs more days than not for a minimum of six months. Individuals with Generalized Anxiety Disorder find it difficult to control the worry. Anxiety can lead to clinically significant distress or impairment in occupational, social, or other important areas of functioning (American Psychiatric Association, 2013).

Think 

Do you know a student like this?

Separation Anxiety Disorder

Separation anxiety disorder (SAD) is a disorder where a child becomes extremely anxious when separated from parents (American Psychiatric Association, 2013).

Think 

Do you know a student like this?

Panic Disorder

Panic disorder is a psychiatric disorder where incapacitating fear and anxiety arise repeatedly without reasonable cause (American Psychiatric Association, 2013).

Think 

Do you know a student like this?

Prevalence

Around **40%** of individuals with ASD meet the diagnostic criteria for an anxiety disorder.

- Specific Phobia: 30%
- Obsessive-Compulsive Disorder: 17%
- Social Anxiety Disorder/Agoraphobia: 17%
- Generalized Anxiety Disorder: 15%
- Separation Anxiety Disorder: 9 %
- Panic Disorder: 2%

Children with ASD are **twice** as likely to reach diagnostic threshold for each anxiety disorder as typically developing children.

Children with ASD have more severe symptoms of phobias, compulsions, obsessions, social phobia, and motor and vocal tics, than other groups of children.

van Steensel, Bgels, & Perrin (2011)

Symptoms

Anxiety in ASD can cause behaviors such as:

- Meltdowns
- Avoidance
- Insistence on sameness or routine
- Lack of sleep
- Rocking
- Spinning or flapping hands
- Self-injury (head banding, scratching, biting)
- Obsessing on rituals such as lining up objects

(Castorina, 2017)

Symptoms

Anxiety symptoms that occur in children and adolescents with ASD can significantly interfere with their ability to participate in home, community and school activities (de Bruin, Ferdinand, Meester, de Nijs, & Verheij, 2007).

It can also negatively impact their success in school and employment. This can often lead to substance abuse and other psychiatric problems (Velting, Setzer, & Albano, 2004).

Depression and anxiety rates are higher in children and adolescents with ASD in comparison to typically developing youth (Strang et al., 2012)

Symptoms

Kerns et al. (2014) studied symptomology in youth with ASD and found that these individuals exhibit anxiety in typical and atypical ways when compared to DSM definitions.

- Atypical symptoms include: circumscribed worries (22%), distress but functionally ambiguous rituals and compulsions (8.5%), social fearfulness (8.5%), & impairing unusual fears (12%)

The atypical symptoms are a different form of anxiety and still cause distress but are not labeled in the DSM V.

The presence of impairing worries, unusual fears, and compulsive/ritualistic behaviors that are related to both ASD and anxiety reflect a distinct manifestation of anxiety symptoms that do not align with traditional DSM criteria, but nonetheless subjects exhibited an anxiety disorder.

- Anxiety disorders can co-occur in people with ASD
- Anxiety can be separate from the ASD
- Anxiety may not be a phenomenon of ASD.

(Kerns et al., 2014 & White et al., 2015)

Factors Influencing Anxiety Diagnosis

- Magiati et al., (2016) found no links between rates of anxiety symptoms and gender.
- Characteristics such as age and gender of children affects different anxiety subtypes, rather than overall anxiety symptoms. (Kerns and Kendall, 2012)
  - Age was associated with OCD symptoms. Younger age resulted in higher OCD rates (Magiati et al., 2016; Costello, Egger, & Angold 2005)
- Mixed results have been found in regards to IQ.
  - White, Oswald, Ollendick, and Scahill (2009) found that younger children with ASD who are cognitively higher functioning, experience more anxiety that children with ASD who are cognitively lower functioning according to.
  - While, White and Roberson-Nay (2009) found that lower cognitively functioning individuals experience more anxiety.

Factors Influencing Anxiety Diagnosis

MacNeil, Lopes, & Minnes (2009) found that anxiety varies with ASD severity.

- Children with less severe ASD symptoms have higher levels of anxiety.
- Weisbrot, Gadow, DeVincent, & Pomeroy (2005) supported this claim and found that adolescents and children with Asperger's syndrome have the highest anxiety levels followed by individuals with autistic disorder and PDD-NOS.

Sukhodolsky et al., (2008) found no differences in anxiety levels between ASD subtypes.

Results are mixed whether anxiety disorders differ across ASD subtypes.

Factors Influencing Anxiety Diagnosis: Assessments

Method of assessment is a significant factor in influencing reported anxiety prevalence rates in children with ASD.

Examples:

- When interview based measures were used the prevalence of anxiety disorders increased.
- Questionnaires were associated with higher prevalence rates when looking at anxiety disorder, generalized anxiety disorder, and social anxiety disorder.

The BASC-2, NASSQ, PARS, and SCARED all under-identify real anxiety disorders and falsely identify those without anxiety disorders in youth with ASD.

(Kerns et al., 2015)

Factors Influencing Anxiety Diagnosis: Assessments

MacNeil, Lopes, & Minnes (2009), found that when assessing children and adolescents with ASD for anxiety disorders, **multiple informants, standardized assessments, and multimodal assessment techniques** are appropriate and most effective in accurately identifying anxiety disorders.

- Multimodal assessments include clinical interviews, direct observation, rating scales, and physiological measurement, etc.
- Multiple informants include parents, teachers, self-report, etc.
- Standardized assessments include instruments that have sufficient reliability and validity as well as normative data for ASD samples.

van Steensel, Bgels, & Perrin's 2011

Treatment

Many successful intervention programs have been developed for typically developing children with anxiety disorders, however, due to the cognitive, linguistic, and social characteristics of ASD, the standard Cognitive Behavior Therapy (CBT) treatment approaches are less effective for youth with ASD.

Modified CBT = reduction in anxiety symptoms for high functioning youth with ASD

(Storch et al., 2013)

Treatment

Wood et al. in 2009, also modified cognitive behavior therapy protocol and altered it for children with ASD and comorbid anxiety disorders. They focused on the importance of adapting and expanding traditional CBT.

- children's interests need to be incorporated into treatment
- stressed the importance of improving adaptive skills
- Addressed poor social skills, restricted interests and stereotypes, adaptive skills deficits, and poor attention and motivation.

- **Results suggest that with appropriate enhancements, cognitive behavior therapy is effective in the treatment of anxiety disorders among children with ASD.**

Treatment

Chalfant, Rapee, & Carroll (2007) modified Cognitive Behavioral Therapy for children and adolescents with ASD.

- 71.4% of the participants no longer fulfilled the diagnostic criteria for an anxiety disorder.
- Significant reductions in anxiety levels and symptoms as measured by parent, self, and teacher report.

Vasa et al. (2014) studied the effects of medication on treating anxiety among youth with ASD. Results showed:

- Citalopram reduced anxiety and decreased target symptoms, aggression, stereotypies, and preoccupations in 59% of participants. They also found that citalopram reduced PDD-related anxiety symptoms in 66% of participants.
- Buspirone reduced anxiety in 73% of participants.
- Fluvoxamine lacked efficacy in treating OCD anxiety symptoms.

Tools for Teachers in Helping Reduce Anxiety in Students with ASD

Relaxation and calming strategies

- Build in relaxation/calming breaks throughout the day
  - counting slowly to 10, taking five deep breaths, stretches, head down for 2 minutes, reading a favorite book, closing eyes for a few moments, going to a quiet part of the classroom.

Get your students to practice these strategies when calm. Once they know the strategies well, you can gently guide them to try them when they feel anxious.

Visual techniques

- Many individuals with ASD are visual learners. Implementing visual schedules, social stories and, pictures of themselves in certain situations can help them know what to expect and alleviate some anxiety.

(Davis, 2017)

Tools for Teachers in Helping Reduce Anxiety in Students with ASD

Role play or practice stressful situations

- Role playing or practicing anxiety producing situations can help them understand the situation in a visual way and become familiar with what to expect.

EX: practicing social situations

Avoid Sarcasm and Idioms

- Children with ASD are literal thinkers, so when you say "put your thinking caps on" or "it's raining cats and dogs" these students will be confused and stressed.

(Davis, 2017)

Tools for Teachers in Helping Reduce Anxiety in Students with ASD

Social Stories

- Stories used to help children understand social situations and expectations

Students can look at the stories when they feel anxious. The stories are visual and can help students prepare and understand social situations.

Buddies for Unstructured Time

- Use peers as recess pals or lunchroom buddies for younger students and peer mentors for older students can ease student's fear of rejection.
- Avoid allowing students to chose when groups are being formed, teachers appoint or use another technique to eliminate the last person chosen situation.
  - Examples: Counting off, popsicle stick draw, seating arrangement

(Davis, 2017)

Tools for Teachers in Helping Reduce Anxiety in Students with ASD

Pre-Teach

- Give student's a "heads up" to when a change is happening.
- For example- If an assembly is coming up, make sure to talk with the class or even the anxious student ahead of time (days) to explain the change.

Create Routines in Class

- Have clear routines and transitions in your classroom.
- This will help reduce anxiety in children as they know what to expect and what is coming next.

(Davis, 2017)

Tools for Teachers in Helping Reduce Anxiety in Students with ASD

Use Varying Means of Presentation

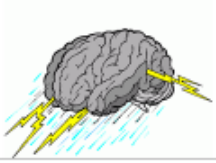
- Switching up the means of presentation will allow these students to access the material in a way where they understand.
  - visual, physical guidance, peer modeling, etc

Avoid Overstimulation

- Remove big distractors or provide students with an individual work space.
- Colorful wall displays, loud noises, harsh lighting can be overwhelming and anxiety producing.
  - Ex: provide headphones, light diffusors, create safe place for student to go if overwhelmed.

(Davis, 2017)

What About You?!



What tools have you used in your classroom that were effective in reducing anxiety in students with ASD?

-
-
-
-
-
-

Disclaimer

These tools are useful for children with ASD in reducing anxiety in the classroom. However, these practices should not be in place or used as treatment. Trained professionals should be involved in helping with managing children's anxiety.

- Psychologists are specialized in training in mental health conditions and can work directly with families to develop a plan for reducing anxiety.
- Other professionals include occupational therapists, psychiatrists, speech language pathologists and general practitioners.
- Some examples of professional treatments include:
  - Cognitive Behavior Therapy (CBT) – Therapy focused on building skills to change thinking in situations that make a child anxious.
  - Relaxation training
  - Exposure therapy
  - Medication Management

References

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). Arlington, VA: American Psychiatric Publishing.

Castorina, L. (2017, May 30). Anxiety: children and teenagers with autism spectrum disorder. Retrieved July 11, 2017, from http://raisingchildren.net.au/articles/autism_spectrum_disorder_anxiety.html

Chalfant, A. M., Rapee, R., & Carroll, L. (2007). Treating anxiety disorders in children with high functioning autism spectrum disorders: A controlled trial. Journal of Autism and Developmental Disorders, 37(10), 1842-1857.

Costello, E. J., Egger, H. L., & Angold, A. (2005). The developmental epidemiology of anxiety disorders: Phenomenology, prevalence, and comorbidity. Child and Adolescent Psychiatric Clinics of North America, 14(4), 631-648.

Davis, K. (2017). *Classroom ideas to reduce anxiety*. Retrieved July 26, 2017, from https://www.iidc.indiana.edu/pages/classroom-ideas-to-reduce-anxiety

de Bruin, E. I., Ferdinand, R. F., Meester, S., de Nijs, P. F., & Verheij, F. (2007). High rates of psychiatric co-morbidity in PDD-NOS. Journal of Autism and Developmental Disorders, 37(5), 877-886.

Kerns, C. M., Kendall, P. C., Berry, L., Souders, M. C., Franklin, M. E., Schultz, R. T., . . . Herrington, J. (2014). Traditional and atypical presentations of anxiety in youth with autism spectrum disorder. Journal of Autism and Developmental Disorders, 44(11), 2851-2861.

MacNeil, B. M., Lopes, V. A., & Minnes, P. M. (2009). Anxiety in children and adolescents with autism spectrum disorders. Research in Autism Spectrum Disorders, 3(1), 1-21.

Magiati, I., Ong, C., Lim, X. Y., Tan, J. W., Ong, A. Y. L., Patrycia, F., . . . Howlin, P. (2016). Anxiety symptoms in young people with autism spectrum disorder attending special schools: Associations with gender, adaptive functioning and autism symptomatology. Autism: The International Journal of Research and Practice, 20(3), 306-320.

References

Strang, J. F., Kenworthy, L., Daniolos, P., Case, L., Wills, M. C., Martin, A., & Wallace, G. L. (2012). Depression and anxiety symptoms in children and adolescents with autism spectrum disorders without intellectual disability. Research in Autism Spectrum Disorders, 6(1), 406-412.

Storch, E. A., Arnold, E. B., Lewin, A. B., Nadeau, J. M., Jones, A. M., De Nadai, A. S., . . . Murphy, T. K. (2013). The effect of cognitive-behavioral therapy versus treatment as usual for anxiety in children with autism spectrum disorders: A randomized, controlled trial. Journal of the American Academy of Child & Adolescent Psychiatry, 52(2), 142. e2.

Sukhodolsky, D. G., Scahill, L., Gadow, K. D., Arnold, L. E., Aman, M. G., McDougle, C. J., . . . Lecavalier, L. (2008). Parent-rated anxiety symptoms in children with pervasive developmental disorders: Frequency and association with core autism symptoms and cognitive functioning. Journal of Abnormal Child Psychology, 36(1), 117-128.

van Steensel, F., Bögels, S., & Perrin, S. (2011). Anxiety disorders in children and adolescents with autistic spectrum disorders: A meta-analysis. Clinical Child & Family Psychology Review, 14(3), 302-317. doi:10.1007/s10567-011-0097-0.

Velting, O. N., Setzer, N. J., & Albano, A. M. (2004). Update on and advances in assessment and cognitive-behavioral treatment of anxiety disorders in children and adolescents. Professional Psychology: Research and Practice, 35(1), 42.

White, S. W., Oswald, D., Ollendick, T., & Scahill, L. (2009). Anxiety in children and adolescents with autism spectrum disorders. Clinical Psychology Review, 29(3), 216-229.

White, S. W., Lerner, M. D., McLeod, B. D., Wood, J. J., Ginsburg, G. S., Kerns, C., . . . Compton, S. (2015). Anxiety in youth with and without autism spectrum disorder: Examination of factorial equivalence. Behavior Therapy, 46(1), 40-53. doi:10.1016/j.beth.2014.05.005.

Wood, J. J., Drahota, A., Sze, K., Har, K., Chiu, A., & Langer, D. A. (2009). Cognitive behavioral therapy for anxiety in children with autism spectrum disorders: A randomized, controlled trial. Journal of Child Psychology and Psychiatry, 50(3), 224-234.